

SEQUENCE LISTING

<110> Estell, David
Harding, Fiona

<120> PROTEINS PRODUCING AN ALTERED IMMUNOGENIC RESPONSE AND
METHODS OF MAKING AND USING THE SAME

<130> A-68893/DJB/DAV

<140> 09/500,135

<141> 2000-02-08

<150> 09/060,872

<151> 1998-04-15

<160> 236

<170> PatentIn Ver. 2.1

<210> 1

<211> 1495

<212> DNA

<213> Bacillus amyloliquefaciens

<220>

<221> mat_peptide

<222> (417)..(1495)

<220>

<221> CDS

<222> (96)..(1244)

<220>

<221> unsure

<222> (96)..(98)

<223> The nnn at positions 96 through 98 represents gtg,
which is to code for methionine.

<220>

<221> unsure

<222> (582)..(584)

<223> The nnn at positions 582 through 584 represents
Xaa, which in a preferred embodiment (aat) is to
code for asparagine, but which may also code for
proline.

<220>

<221> unsure
<222> (585) .. (587)
<223> The nnn at positions 585 through 587 represents Xaa, which in a preferred embodiment (cct) is to code for proline, but which may also code for asparagine.

<220>
<221> unsure
<222> (597) .. (599)
<223> The nnn at positions 597 to 599 represents Xaa, which in a preferred embodiment (aac) is to code for asparagine, but which may also code for aspartic acid.

<220>
<221> unsure
<222> (678) .. (680)
<223> The nnn at positions 678 through 680 represents Xaa, which in a preferred embodiment (gca) is to code for alanine, but which may also code for serine.

<220>
<221> unsure
<222> (681) .. (683)
<223> The nnn at positions 681 through 683 represents Xaa, which in a preferred embodiment (tca) is to code for serine, but which may also code for alanine.

<220>
<221> unsure
<222> (708) .. (710)
<223> The nnn at positions 708 through 710 represents Xaa, which in a preferred embodiment (gct) is to code for alanine, but which may also code for aspartic acid.

<220>
<221> unsure
<222> (711) .. (713)
<223> The nnn at positions 711 through 713 represents Xaa, which in a preferred embodiment (gac) is to code for aspartic acid, but which may also code for alanine.

<220>

<221> unsure

<222> (888) .. (890)

<223> The nnn at positions 888 through 890 represents Xaa, which in a preferred embodiment (act) is to code for threonine, but which may also code for serine.

<220>

<221> unsure

<222> (891) .. (893)

<223> The nnn at positions 891 through 893 represents Xaa, which in a preferred embodiment (tcc) is to code for serine, but which may also code for threonine.

<220>

<221> unsure

<222> (1167) .. (1169)

<223> The nnn at positions 1167 through 1169 represents Xaa, which in a preferred embodiment (gaa) is to code for glutamic acid, but which may also code for glutamine.

<400> 1

ggtctactaa aatattattc catactatac aattaataca cagaataatc tgtctattgg 60

ttattctgca aatgaaaaaa aggagaggat aaaga nnn aga ggc aaa aaa gta 113
Xaa Arg Gly Lys Lys Val
-105

tgg atc agt ttg ctg ttt gct tta gcg tta atc ttt acg atg gcg ttc 161
Trp Ile Ser Leu Leu Phe Ala Leu Ala Leu Ile Phe Thr Met Ala Phe
-100 -95 -90

ggc agc aca tcc tct gcc cag gcg gca ggg aaa tca aac ggg gaa aag 209
Gly Ser Thr Ser Ser Ala Gln Ala Ala Gly Lys Ser Asn Gly Glu Lys
-85 -80 -75 -70

aaa tat att gtc ggg ttt aaa cag aca atg agc acg atg agc gcc gct 257
Lys Tyr Ile Val Gly Phe Lys Gln Thr Met Ser Thr Met Ser Ala Ala
-65 -60 -55

aag aag aaa gat gtc att tct gaa aaa ggc ggg aaa gtg caa aag caa 305
Lys Lys Lys Asp Val Ile Ser Glu Lys Gly Gly Lys Val Gln Lys Gln
-50 -45 -40

ttc aaa tat gta gac gca gct tca gct aca tta aac gaa aaa gct gta 353
Phe Lys Tyr Val Asp Ala Ala Ser Ala Thr Leu Asn Glu Lys Ala Val

| | | | |
|---|------|-----|-----|
| -35 | -30 | -25 | |
| aaa gaa ttg aaa aaa gac ccg agc gtc gct tac gtt gaa gaa gat cac | | | 401 |
| Lys Glu Leu Lys Lys Asp Pro Ser Val Ala Tyr Val Glu Glu Asp His | | | |
| -20 | -15 | -10 | |
| gta gca cat gcg tac gcg cag tcc gtg cct tac ggc gta tca caa att | | | 449 |
| Val Ala His Ala Tyr Ala Gln Ser Val Pro Tyr Gly Val Ser Gln Ile | | | |
| -5 | -1 1 | 5 | 10 |
| aaa gcc cct gct ctg cac tct caa ggc tac act gga tca aat gtt aaa | | | 497 |
| Lys Ala Pro Ala Leu His Ser Gln Gly Tyr Thr Gly Ser Asn Val Lys | | | |
| 15 | 20 | 25 | |
| gta gcg gtt atc gac agc ggt atc gat tct tct cat cct gat tta aag | | | 545 |
| Val Ala Val Ile Asp Ser Gly Ile Asp Ser Ser His Pro Asp Leu Lys | | | |
| 30 | 35 | 40 | |
| gta gca ggc gga gcc agc atg gtt cct tct gaa aca nnn nnn ttc caa | | | 593 |
| Val Ala Gly Gly Ala Ser Met Val Pro Ser Glu Thr Xaa Xaa Phe Gln | | | |
| 45 | 50 | 55 | |
| gac nnn aac tct cac gga act cac gtt gcc ggc aca gtt gcg gct ctt | | | 641 |
| Asp Xaa Asn Ser His Gly Thr His Val Ala Gly Thr Val Ala Ala Leu | | | |
| 60 | 65 | 70 | 75 |
| aat aac tca atc ggt gta tta ggc gtt gcg cca agc nnn nnn ctt tac | | | 689 |
| Asn Asn Ser Ile Gly Val Leu Gly Val Ala Pro Ser Xaa Xaa Leu Tyr | | | |
| 80 | 85 | 90 | |
| gct gta aaa gtt ctc ggt nnn nnn ggt tcc ggc caa tac agc tgg atc | | | 737 |
| Ala Val Lys Val Leu Gly Xaa Xaa Gly Ser Gly Gln Tyr Ser Trp Ile | | | |
| 95 | 100 | 105 | |
| att aac gga atc gag tgg gcg atc gca aac aat atg gac gtt att aac | | | 785 |
| Ile Asn Gly Ile Glu Trp Ala Ile Ala Asn Asn Met Asp Val Ile Asn | | | |
| 110 | 115 | 120 | |
| atg agc ctc ggc gga cct tct ggt tct gct gct tta aaa gcg gca gtt | | | 833 |
| Met Ser Leu Gly Gly Pro Ser Gly Ser Ala Ala Leu Lys Ala Ala Val | | | |
| 125 | 130 | 135 | |
| gat aaa gcc gtt gca tcc ggc gtc gta gtc gtt gcg gca gcc ggt aac | | | 881 |
| Asp Lys Ala Val Ala Ser Gly Val Val Val Val Ala Ala Ala Gly Asn | | | |
| 140 | 145 | 150 | 155 |
| gaa ggc nnn nnn ggc agc tca agc aca gtg ggc tac cct ggt aaa tac | | | 929 |
| Glu Gly Xaa Xaa Gly Ser Ser Ser Thr Val Gly Tyr Pro Gly Lys Tyr | | | |

| 160 | 165 | 170 | |
|--|-----|-----|------|
| cct tct gtc att gca gta ggc gct gtt gac agc agc aac caa aga gca | | | 977 |
| Pro Ser Val Ile Ala Val Gly Ala Val Asp Ser Ser Asn Gln Arg Ala | | | |
| 175 | 180 | 185 | |
| tct ttc tca agc gta gga cct gag ctt gat gtc atg gca cct ggc gta | | | 1025 |
| Ser Phe Ser Ser Val Gly Pro Glu Leu Asp Val Met Ala Pro Gly Val | | | |
| 190 | 195 | 200 | |
| tct atc caa agc acg ctt cct gga aac aaa tac ggg gcg tac aac ggt | | | 1073 |
| Ser Ile Gln Ser Thr Leu Pro Gly Asn Lys Tyr Gly Ala Tyr Asn Gly | | | |
| 205 | 210 | 215 | |
| acg tca atg gca tct ccg cac gtt gcc gga gcg gct gct ttg att ctt | | | 1121 |
| Thr Ser Met Ala Ser Pro His Val Ala Gly Ala Ala Ala Leu Ile Leu | | | |
| 220 | 225 | 230 | 235 |
| tct aag cac ccg aac tgg aca aac act caa gtc cgc agc agt tta nnn | | | 1169 |
| Ser Lys His Pro Asn Trp Thr Asn Thr Gln Val Arg Ser Ser Leu Xaa | | | |
| 240 | 245 | 250 | |
| aac acc act aca aaa ctt ggt gat tct ttc tac tat gga aaa ggg ctg | | | 1217 |
| Asn Thr Thr Thr Lys Leu Gly Asp Ser Phe Tyr Tyr Gly Lys Gly Leu | | | |
| 255 | 260 | 265 | |
| atc aac gta cag gcg gca gct cag taa aacataaaaa accggccttg | | | 1264 |
| Ile Asn Val Gln Ala Ala Ala Gln | | | |
| 270 | 275 | | |
| gccccgcggg tttttttatt tttcttcttc cgcattgttca atccgctcca taatcgacgg | | | 1324 |
| atggctccct ctgaaaattt taacgagaaa cggcggggttg acccggtcca gtcccgtaac | | | 1384 |
| ggccaagtcc tgaaacgtct caatcgccgc ttcccggttt ccggtcagct caatgccgta | | | 1444 |
| acggtcggcg gcgttttctt gataccggga gacggcattc gtaatcggat c | | | 1495 |

<210> 2

<211> 382

<212> PRT

<213> Bacillus amyloliquefaciens

<400> 2

Xaa Arg Gly Lys Lys Val Trp Ile Ser Leu Leu Phe Ala Leu Ala Leu

1

5

10

15

Ile Phe Thr Met Ala Phe Gly Ser Thr Ser Ser Ala Gln Ala Ala Gly

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | | | 20 | | | | 25 | | | | 30 | | | | | | |
| Lys | Ser | Asn | Gly | Glu | Lys | Lys | Tyr | Ile | Val | Gly | Phe | Lys | Gln | Thr | Met | | |
| | | | 35 | | | | | 40 | | | | | 45 | | | | |
| Ser | Thr | Met | Ser | Ala | Ala | Lys | Lys | Lys | Asp | Val | Ile | Ser | Glu | Lys | Gly | | |
| | | | 50 | | | | | 55 | | | | | 60 | | | | |
| Gly | Lys | Val | Gln | Lys | Gln | Phe | Lys | Tyr | Val | Asp | Ala | Ala | Ser | Ala | Thr | | |
| | | | 65 | | | | | 70 | | | | | 75 | | 80 | | |
| Leu | Asn | Glu | Lys | Ala | Val | Lys | Glu | Leu | Lys | Lys | Asp | Pro | Ser | Val | Ala | | |
| | | | 85 | | | | | 90 | | | | | 95 | | | | |
| Tyr | Val | Glu | Glu | Asp | His | Val | Ala | His | Ala | Tyr | Ala | Gln | Ser | Val | Pro | | |
| | | | 100 | | | | | 105 | | | | | 110 | | | | |
| Tyr | Gly | Val | Ser | Gln | Ile | Lys | Ala | Pro | Ala | Leu | His | Ser | Gln | Gly | Tyr | | |
| | | | 115 | | | | | 120 | | | | | 125 | | | | |
| Thr | Gly | Ser | Asn | Val | Lys | Val | Ala | Val | Ile | Asp | Ser | Gly | Ile | Asp | Ser | | |
| | | | 130 | | | | | 135 | | | | | 140 | | | | |
| Ser | His | Pro | Asp | Leu | Lys | Val | Ala | Gly | Gly | Ala | Ser | Met | Val | Pro | Ser | | |
| 145 | | | | | | 150 | | | | | 155 | | | | | 160 | |
| Glu | Thr | Xaa | Xaa | Phe | Gln | Asp | Xaa | Asn | Ser | His | Gly | Thr | His | Val | Ala | | |
| | | | 165 | | | | | 170 | | | | | 175 | | | | |
| Gly | Thr | Val | Ala | Ala | Leu | Asn | Asn | Ser | Ile | Gly | Val | Leu | Gly | Val | Ala | | |
| | | | 180 | | | | | 185 | | | | | 190 | | | | |
| Pro | Ser | Xaa | Xaa | Leu | Tyr | Ala | Val | Lys | Val | Leu | Gly | Xaa | Xaa | Gly | Ser | | |
| | | | 195 | | | | | 200 | | | | | 205 | | | | |
| Gly | Gln | Tyr | Ser | Trp | Ile | Ile | Asn | Gly | Ile | Glu | Trp | Ala | Ile | Ala | Asn | | |
| | | | 210 | | | | | 215 | | | | | 220 | | | | |
| Asn | Met | Asp | Val | Ile | Asn | Met | Ser | Leu | Gly | Gly | Pro | Ser | Gly | Ser | Ala | | |
| 225 | | | | | | 230 | | | | | 235 | | | | | 240 | |
| Ala | Leu | Lys | Ala | Ala | Val | Asp | Lys | Ala | Val | Ala | Ser | Gly | Val | Val | Val | | |
| | | | 245 | | | | | 250 | | | | | 255 | | | | |
| Val | Ala | Ala | Ala | Gly | Asn | Glu | Gly | Xaa | Xaa | Gly | Ser | Ser | Ser | Thr | Val | | |
| | | | 260 | | | | | 265 | | | | | 270 | | | | |
| Gly | Tyr | Pro | Gly | Lys | Tyr | Pro | Ser | Val | Ile | Ala | Val | Gly | Ala | Val | Asp | | |
| | | | 275 | | | | | 280 | | | | | 285 | | | | |
| Ser | Ser | Asn | Gln | Arg | Ala | Ser | Phe | Ser | Ser | Val | Gly | Pro | Glu | Leu | Asp | | |
| | | | 290 | | | | | 295 | | | | | 300 | | | | |
| Val | Met | Ala | Pro | Gly | Val | Ser | Ile | Gln | Ser | Thr | Leu | Pro | Gly | Asn | Lys | | |
| 305 | | | | | | 310 | | | | | 315 | | | | | 320 | |
| Tyr | Gly | Ala | Tyr | Asn | Gly | Thr | Ser | Met | Ala | Ser | Pro | His | Val | Ala | Gly | | |
| | | | 325 | | | | | 330 | | | | | 335 | | | | |
| Ala | Ala | Ala | Leu | Ile | Leu | Ser | Lys | His | Pro | Asn | Trp | Thr | Asn | Thr | Gln | | |
| | | | 340 | | | | | 345 | | | | | 350 | | | | |
| Val | Arg | Ser | Ser | Leu | Xaa | Asn | Thr | Thr | Thr | Lys | Leu | Gly | Asp | Ser | Phe | | |
| | | | 355 | | | | | 360 | | | | | 365 | | | | |
| Tyr | Tyr | Gly | Lys | Gly | Leu | Ile | Asn | Val | Gln | Ala | Ala | Ala | Gln | | | | |
| 370 | | | | | | 375 | | | | | 380 | | | | | | |

<210> 3

<211> 275

<212> PRT

<213> Bacillus amyloliquefaciens

<400> 3

Ala Gln Ser Val Pro Tyr Gly Val Ser Gln Ile Lys Ala Pro Ala Leu
1 5 10 15

His Ser Gln Gly Tyr Thr Gly Ser Asn Val Lys Val Ala Val Ile Asp
20 25 30

Ser Gly Ile Asp Ser Ser His Pro Asp Leu Lys Val Ala Gly Gly Ala
35 40 45

Ser Met Val Pro Ser Glu Thr Asn Pro Phe Gln Asp Asn Asn Ser His
50 55 60

Gly Thr His Val Ala Gly Thr Val Ala Ala Leu Asn Asn Ser Ile Gly
65 70 75 80

Val Leu Gly Val Ala Pro Ser Ala Ser Leu Tyr Ala Val Lys Val Leu
85 90 95

Gly Ala Asp Gly Ser Gly Gln Tyr Ser Trp Ile Ile Asn Gly Ile Glu
100 105 110

Trp Ala Ile Ala Asn Asn Met Asp Val Ile Asn Met Ser Leu Gly Gly
115 120 125

Pro Ser Gly Ser Ala Ala Leu Lys Ala Ala Val Asp Lys Ala Val Ala
130 135 140

Ser Gly Val Val Val Val Ala Ala Ala Gly Asn Glu Gly Thr Ser Gly
145 150 155 160

Ser Ser Ser Thr Val Gly Tyr Pro Gly Lys Tyr Pro Ser Val Ile Ala
165 170 175

Val Gly Ala Val Asp Ser Ser Asn Gln Arg Ala Ser Phe Ser Ser Val
180 185 190

Gly Pro Glu Leu Asp Val Met Ala Pro Gly Val Ser Ile Gln Ser Thr
195 200 205

Leu Pro Gly Asn Lys Tyr Gly Ala Tyr Asn Gly Thr Ser Met Ala Ser
210 215 220

Pro His Val Ala Gly Ala Ala Ala Leu Ile Leu Ser Lys His Pro Asn
 225 230 235 240

Trp Thr Asn Thr Gln Val Arg Ser Ser Leu Glu Asn Thr Thr Thr Lys
 245 250 255

Leu Gly Asp Ser Phe Tyr Tyr Gly Lys Gly Leu Ile Asn Val Gln Ala
 260 265 270

Ala Ala Gln
 275

<210> 4

<211> 275

<212> PRT

<213> Bacillus subtilis

<400> 4

Ala Gln Ser Val Pro Tyr Gly Ile Ser Gln Ile Lys Ala Pro Ala Leu
 1 5 10 15

His Ser Gln Gly Tyr Thr Gly Ser Asn Val Lys Val Ala Val Ile Asp
 20 25 30

Ser Gly Ile Asp Ser Ser His Pro Asp Leu Asn Val Arg Gly Gly Ala
 35 40 45

Ser Phe Val Pro Ser Glu Thr Asn Pro Tyr Gln Asp Gly Ser Ser His
 50 55 60

Gly Thr His Val Ala Gly Thr Ile Ala Ala Leu Asn Asn Ser Ile Gly
 65 70 75 80

Val Leu Gly Val Ser Pro Ser Ala Ser Leu Tyr Ala Val Lys Val Leu
 85 90 95

Asp Ser Thr Gly Ser Gly Gln Tyr Ser Trp Ile Ile Asn Gly Ile Glu
 100 105 110

Trp Ala Ile Ser Asn Asn Met Asp Val Ile Asn Met Ser Leu Gly Gly
 115 120 125

Pro Thr Gly Ser Thr Ala Leu Lys Thr Val Val Asp Lys Ala Val Ser
 130 135 140

Ser Gly Ile Val Val Ala Ala Ala Ala Gly Asn Glu Gly Ser Ser Gly
 145 150 155 160

Ser Thr Ser Thr Val Gly Tyr Pro Ala Lys Tyr Pro Ser Thr Ile Ala
165 170 175

Val Gly Ala Val Asn Ser Ser Asn Gln Arg Ala Ser Phe Ser Ser Ala
180 185 190

Gly Ser Glu Leu Asp Val Met Ala Pro Gly Val Ser Ile Gln Ser Thr
195 200 205

Leu Pro Gly Gly Thr Tyr Gly Ala Tyr Asn Gly Thr Ser Met Ala Thr
210 215 220

Pro His Val Ala Gly Ala Ala Ala Leu Ile Leu Ser Lys His Pro Thr
225 230 235 240

Trp Thr Asn Ala Gln Val Arg Asp Arg Leu Glu Ser Thr Ala Thr Tyr
245 250 255

Leu Gly Asn Ser Phe Tyr Tyr Gly Lys Gly Leu Ile Asn Val Gln Ala
260 265 270

Ala Ala Gln
275

<210> 5

<211> 274

<212> PRT

<213> Bacillus licheniformis

<400> 5

Ala Gln Thr Val Pro Tyr Gly Ile Pro Leu Ile Lys Ala Asp Lys Val
1 5 10 15

Gln Ala Gln Gly Phe Lys Gly Ala Asn Val Lys Val Ala Val Leu Asp
20 25 30

Thr Gly Ile Gln Ala Ser His Pro Asp Leu Asn Val Val Gly Gly Ala
35 40 45

Ser Phe Val Ala Gly Glu Ala Tyr Asn Thr Asp Gly Asn Gly His Gly
50 55 60

Thr His Val Ala Gly Thr Val Ala Ala Leu Asp Asn Thr Thr Gly Val
65 70 75 80

Leu Gly Val Ala Pro Ser Val Ser Leu Tyr Ala Val Lys Val Leu Asn

| | | | | | |
|---|-----|--|-----|--|-----|
| | 85 | | 90 | | 95 |
| Ser Ser Gly Ser Gly Ser Tyr Ser Gly Ile Val Ser Gly Ile Glu Trp | | | | | |
| | 100 | | 105 | | 110 |
| Ala Thr Thr Asn Gly Met Asp Val Ile Asn Met Ser Leu Gly Gly Ala | | | | | |
| | 115 | | 120 | | 125 |
| Ser Gly Ser Thr Ala Met Lys Gln Ala Val Asp Asn Ala Tyr Ala Arg | | | | | |
| | 130 | | 135 | | 140 |
| Gly Val Val Val Val Ala Ala Ala Gly Asn Ser Gly Asn Ser Gly Ser | | | | | |
| | 145 | | 150 | | 155 |
| | | | | | 160 |
| Thr Asn Thr Ile Gly Tyr Pro Ala Lys Tyr Asp Ser Val Ile Ala Val | | | | | |
| | | | 165 | | 170 |
| | | | | | 175 |
| Gly Ala Val Asp Ser Asn Ser Asn Arg Ala Ser Phe Ser Ser Val Gly | | | | | |
| | | | 180 | | 185 |
| | | | | | 190 |
| Ala Glu Leu Glu Val Met Ala Pro Gly Ala Gly Val Tyr Ser Thr Tyr | | | | | |
| | | | 195 | | 200 |
| | | | | | 205 |
| Pro Thr Asn Thr Tyr Ala Thr Leu Asn Gly Thr Ser Met Ala Ser Pro | | | | | |
| | | | 210 | | 215 |
| | | | | | 220 |
| His Val Ala Gly Ala Ala Ala Leu Ile Leu Ser Lys His Pro Asn Leu | | | | | |
| | | | 225 | | 230 |
| | | | | | 235 |
| | | | | | 240 |
| Ser Ala Ser Gln Val Arg Asn Arg Leu Ser Ser Thr Ala Thr Tyr Leu | | | | | |
| | | | 245 | | 250 |
| | | | | | 255 |
| Gly Ser Ser Phe Tyr Tyr Gly Lys Gly Leu Ile Asn Val Glu Ala Ala | | | | | |
| | | | 260 | | 265 |
| | | | | | 270 |

Ala Gln

<210> 6

<211> 269

<212> PRT

<213> Bacillus lentus

<400> 6

| |
|---|
| Ala Gln Ser Val Pro Trp Gly Ile Ser Arg Val Gln Ala Pro Ala Ala |
| 1 5 10 15 |

His Asn Arg Gly Leu Thr Gly Ser Gly Val Lys Val Ala Val Leu Asp
 20 25 30

Thr Gly Ile Ser Thr His Pro Asp Leu Asn Ile Arg Gly Gly Ala Ser
 35 40 45

Phe Val Pro Gly Glu Pro Ser Thr Gln Asp Gly Asn Gly His Gly Thr
 50 55 60

His Val Ala Gly Thr Ile Ala Ala Leu Asn Asn Ser Ile Gly Val Leu
 65 70 75 80

Gly Val Ala Pro Ser Ala Glu Leu Tyr Ala Val Lys Val Leu Gly Ala
 85 90 95

Ser Gly Ser Gly Ser Val Ser Ser Ile Ala Gln Gly Leu Glu Trp Ala
 100 105 110

Gly Asn Asn Gly Met His Val Ala Asn Leu Ser Leu Gly Ser Pro Ser
 115 120 125

Pro Ser Ala Thr Leu Glu Gln Ala Val Asn Ser Ala Thr Ser Arg Gly
 130 135 140

Val Leu Val Val Ala Ala Ser Gly Asn Ser Gly Ala Gly Ser Ile Ser
 145 150 155 160

Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val Gly Ala Thr Asp Gln
 165 170 175

Asn Asn Asn Arg Ala Ser Phe Ser Gln Tyr Gly Ala Gly Leu Asp Ile
 180 185 190

Val Ala Pro Gly Val Asn Val Gln Ser Thr Tyr Pro Gly Ser Thr Tyr
 195 200 205

Ala Ser Leu Asn Gly Thr Ser Met Ala Thr Pro His Val Ala Gly Ala
 210 215 220

Ala Ala Leu Val Lys Gln Lys Asn Pro Ser Trp Ser Asn Val Gln Ile
 225 230 235 240

Arg Asn His Leu Lys Asn Thr Ala Thr Ser Leu Gly Ser Thr Asn Leu
 245 250 255

Tyr Gly Ser Gly Leu Val Asn Ala Glu Ala Ala Thr Arg
 260 265

<210> 7
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 7
Ile Lys Asp Phe His Val Tyr Phe Arg Glu Ser Arg Asp Ala Gly
1 5 10 15

<210> 8
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 8
Leu Glu Gln Ala Val Asn Ser Ala Thr Ser Arg Gly Val Leu Val
1 5 10 15

<210> 9
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 9
Ala Gln Ser Val Pro Trp Gly Ile Ser Arg Val Gln Ala Pro Ala
1 5 10 15

<210> 10
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 10
Val Pro Trp Gly Ile Ser Arg Val Gln Ala Pro Ala Ala His Asn
1 5 10 15

<210> 11
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 11
Gly Ile Ser Arg Val Gln Ala Pro Ala Ala His Asn Arg Gly Leu
1 5 10 15

<210> 12
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 12
Arg Val Gln Ala Pro Ala Ala His Asn Arg Gly Leu Thr Gly Ser
1 5 10 15

<210> 13
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 13
Ala Pro Ala Ala His Asn Arg Gly Leu Thr Gly Ser Gly Val Lys
1 5 10 15

<210> 14
<211> 15
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 14

Ala His Asn Arg Gly Leu Thr Gly Ser Gly Val Lys Val Ala Val
1 5 10 15

<210> 15

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 15

Arg Gly Leu Thr Gly Ser Gly Val Lys Val Ala Val Leu Asp Thr
1 5 10 15

<210> 16

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 16

Thr Gly Ser Gly Val Lys Val Ala Val Leu Asp Thr Gly Ile Ser
1 5 10 15

<210> 17

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 17

Gly Val Lys Val Ala Val Leu Asp Thr Gly Ile Ser Thr His Pro
1 5 10 15

<210> 18
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 18
Val Ala Val Leu Asp Thr Gly Ile Ser Thr His Pro Asp Leu Asn
1 5 10 15

<210> 19
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 19
Leu Asp Thr Gly Ile Ser Thr His Pro Asp Leu Asn Ile Arg Gly
1 5 10 15

<210> 20
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 20
Gly Ile Ser Thr His Pro Asp Leu Asn Ile Arg Gly Gly Ala Ser
1 5 10 15

<210> 21
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 21

Thr His Pro Asp Leu Asn Ile Arg Gly Gly Ala Ser Phe Val Pro
1 5 10 15

<210> 22

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 22

Asp Leu Asn Ile Arg Gly Gly Ala Ser Phe Val Pro Gly Glu Pro
1 5 10 15

<210> 23

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 23

Ile Arg Gly Gly Ala Ser Phe Val Pro Gly Glu Pro Ser Thr Gln
1 5 10 15

<210> 24

<211> 15

<212> PPT

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<220>

<223> Description of Artificial Sequence: Synthetic

<400> 24

Gly Ala Ser Phe Val Pro Gly Glu Pro Ser Thr Gln Asp Gly Asn
1 5 10 15

<210> 25

<211> 15

<212> PPT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 25

Phe Val Pro Gly Glu Pro Ser Thr Gln Asp Gly Asn Gly His Gly
1 5 10 15

<210> 26

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 26

Gly Glu Pro Ser Thr Gln Asp Gly Asn Gly His Gly Thr His Val
1 5 10 15

<210> 27

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 27

Ser Thr Gln Asp Gly Asn Gly His Gly Thr His Val Ala Gly Thr
1 5 10 15

<210> 28

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 28

Asp Gly Asn Gly His Gly Thr His Val Ala Gly Thr Ile Ala Ala
1 5 10 15

<210> 29

<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 29
Gly His Gly Thr His Val Ala Gly Thr Ile Ala Ala Leu Asn Asn
1 5 10 15

<210> 30
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 30
Thr His Val Ala Gly Thr Ile Ala Ala Leu Asn Asn Ser Ile Gly
1 5 10 15

<210> 31
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 31
Ala Gly Thr Ile Ala Ala Leu Asn Asn Ser Ile Gly Val Leu Gly
1 5 10 15

<210> 32
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 32
Ile Ala Ala Leu Asn Asn Ser Ile Gly Val Leu Gly Val Ala Pro

1

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10

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<210> 33

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 33

Leu Asn Asn Ser Ile Gly Val Leu Gly Val Ala Pro Ser Ala Glu

1

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<210> 34

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 34

Ser Ile Gly Val Leu Gly Val Ala Pro Ser Ala Glu Leu Tyr Ala

1

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<210> 35

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 35

Val Leu Gly Val Ala Pro Ser Ala Glu Leu Tyr Ala Val Lys Val

1

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15

<210> 36

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 36

Val Ala Pro Ser Ala Glu Leu Tyr Ala Val Lys Val Leu Gly Ala
1 5 10 15

<210> 37

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 37

Ser Ala Glu Leu Tyr Ala Val Lys Val Leu Gly Ala Ser Gly Ser
1 5 10 15

<210> 38

<211> 15

<212> PRT

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<223> Description of Artificial Sequence: Synthetic

<400> 38

Leu Tyr Ala Val Lys Val Leu Gly Ala Ser Gly Ser Gly Ser Val
1 5 10 15

<210> 39

<211> 15

<212> PRT

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<220>

<223> Description of Artificial Sequence: Synthetic

<400> 39

Val Lys Val Leu Gly Ala Ser Gly Ser Gly Ser Val Ser Ser Ile
1 5 10 15

<210> 40

<211> 15

<212> PRT
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<220>
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<400> 40
Leu Gly Ala Ser Gly Ser Gly Ser Val Ser Ser Ile Ala Gln Gly
1 5 10 15

<210> 41
<211> 15
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic

<400> 41
Ser Gly Ser Gly Ser Val Ser Ser Ile Ala Gln Gly Leu Glu Trp
1 5 10 15

<210> 42
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 42
Gly Ser Val Ser Ser Ile Ala Gln Gly Leu Glu Trp Ala Gly Asn
1 5 10 15

<210> 43
<211> 15
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic

<400> 43
Ser Ser Ile Ala Gln Gly Leu Glu Trp Ala Gly Asn Asn Gly Met
1 5 10 15

<210> 44
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<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic

<400> 44
Ala Gln Gly Leu Glu Trp Ala Gly Asn Asn Gly Met His Val Ala
1 5 10 15

<210> 45
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<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic

<400> 45
Leu Glu Trp Ala Gly Asn Asn Gly Met His Val Ala Asn Leu Ser
1 5 10 15

<210> 46
<211> 15
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic

<400> 46
Ala Gly Asn Asn Gly Met His Val Ala Asn Leu Ser Leu Gly Ser
1 5 10 15

<210> 47
<211> 15
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic

<400> 47

Asn Gly Met His Val Ala Asn Leu Ser Leu Gly Ser Pro Ser Pro
1 5 10 15

<210> 48

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 48

His Val Ala Asn Leu Ser Leu Gly Ser Pro Ser Pro Ser Ala Thr
1 5 10 15

<210> 49

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 49

Asn Leu Ser Leu Gly Ser Pro Ser Pro Ser Ala Thr Leu Glu Gln
1 5 10 15

<210> 50

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 50

Leu Gly Ser Pro Ser Pro Ser Ala Thr Leu Glu Gln Ala Val Asn
1 5 10 15

<210> 51

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 51

Pro Ser Pro Ser Ala Thr Leu Glu Gln Ala Val Asn Ser Ala Thr
1 5 10 15

<210> 52

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 52

Ser Ala Thr Leu Glu Gln Ala Val Asn Ser Ala Thr Ser Arg Gly
1 5 10 15

<210> 53

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 53

Leu Glu Gln Ala Val Asn Ser Ala Thr Ser Arg Gly Val Leu Val
1 5 10 15

<210> 54

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 54

Ala Val Asn Ser Ala Thr Ser Arg Gly Val Leu Val Val Ala Ala
1 5 10 15

<210> 55
<211> 15
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic

<400> 55
Ser Ala Thr Ser Arg Gly Val Leu Val Val Ala Ala Ser Gly Asn
1 5 10 15

<210> 56
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 56
Ser Arg Gly Val Leu Val Val Ala Ala Ser Gly Asn Ser Gly Ala
1 5 10 15

<210> 57
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 57
Val Leu Val Val Ala Ala Ser Gly Asn Ser Gly Ala Gly Ser Ile
1 5 10 15

<210> 58
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<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 58

Val Ala Ala Ser Gly Asn Ser Gly Ala Gly Ser Ile Ser Tyr Pro
1 5 10 15

<210> 59

<211> 15

<212> PRT

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<223> Description of Artificial Sequence: Synthetic

<400> 59

Ser Gly Asn Ser Gly Ala Gly Ser Ile Ser Tyr Pro Ala Arg Tyr
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<212> PRT

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<220>

<223> Description of Artificial Sequence: Synthetic

<400> 60

Ser Gly Ala Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala
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<210> 61

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 61

Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val
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<210> 62

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 62

Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val Gly Ala Thr
1 5 10 15

<210> 63

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 63

Ala Arg Tyr Ala Asn Ala Met Ala Val Gly Ala Thr Asp Gln Asn
1 5 10 15

<210> 64

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 64

Ala Asn Ala Met Ala Val Gly Ala Thr Asp Gln Asn Asn Asn Arg
1 5 10 15

<210> 65

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 65

Met Ala Val Gly Ala Thr Asp Gln Asn Asn Asn Arg Ala Ser Phe
1 5 10 15

<210> 66
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
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<400> 66
Gly Ala Thr Asp Gln Asn Asn Asn Arg Ala Ser Phe Ser Gln Tyr
1 5 10 15

<210> 67
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 67
Asp Gln Asn Asn Asn Arg Ala Ser Phe Ser Gln Tyr Gly Ala Gly
1 5 10 15

<210> 68
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 68
Asn Asn Arg Ala Ser Phe Ser Gln Tyr Gly Ala Gly Leu Asp Ile
1 5 10 15

<210> 69
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 69

Ala Ser Phe Ser Gln Tyr Gly Ala Gly Leu Asp Ile Val Ala Pro
1 5 10 15

<210> 70

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 70

Ser Gln Tyr Gly Ala Gly Leu Asp Ile Val Ala Pro Gly Val Asn
1 5 10 15

<210> 71

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 71

Gly Ala Gly Leu Asp Ile Val Ala Pro Gly Val Asn Val Gln Ser
1 5 10 15

<210> 72

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 72

Leu Asp Ile Val Ala Pro Gly Val Asn Val Gln Ser Thr Tyr Pro
1 5 10 15

<210> 73

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 73

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Ala | Pro | Gly | Val | Asn | Val | Gln | Ser | Thr | Tyr | Pro | Gly | Ser | Thr |
| 1 | | | | 5 | | | | 10 | | | | | 15 | |

<210> 74

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 74

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Val | Asn | Val | Gln | Ser | Thr | Tyr | Pro | Gly | Ser | Thr | Tyr | Ala | Ser |
| 1 | | | | 5 | | | | 10 | | | | | 15 | |

<210> 75

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 75

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Gln | Ser | Thr | Tyr | Pro | Gly | Ser | Thr | Tyr | Ala | Ser | Leu | Asn | Gly |
| 1 | | | | 5 | | | | 10 | | | | | 15 | |

<210> 76

<211> 15

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic

<400> 76

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Tyr | Pro | Gly | Ser | Thr | Tyr | Ala | Ser | Leu | Asn | Gly | Thr | Ser | Met |
| 1 | | | | 5 | | | | 10 | | | | | 15 | |

<210> 77

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 77

Gly Ser Thr Tyr Ala Ser Leu Asn Gly Thr Ser Met Ala Thr Pro
1 5 10 15

<210> 78

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 78

Tyr Ala Ser Leu Asn Gly Thr Ser Met Ala Thr Pro His Val Ala
1 5 10 15

<210> 79

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 79

Leu Asn Gly Thr Ser Met Ala Thr Pro His Val Ala Gly Ala Ala
1 5 10 15

<210> 80

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 80

Thr Ser Met Ala Thr Pro His Val Ala Gly Ala Ala Ala Leu Val

1 5 10 15

<210> 81
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 81
Ala Thr Pro His Val Ala Gly Ala Ala Ala Leu Val Lys Gln Lys
1 5 10 15

<210> 82
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 82
Gly Val Ala Gly Ala Ala Ala Leu Val Lys Gln Lys Asn Pro Ser
1 5 10 15

<210> 83
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 83
Gly Ala Ala Ala Leu Val Lys Gln Lys Asn Pro Ser Trp Ser Asn
1 5 10 15

<210> 84
<211> 15
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 84

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Leu | Val | Lys | Gln | Lys | Asn | Pro | Ser | Trp | Ser | Asn | Val | Gln | Ile |
| 1 | | | | 5 | | | | | 10 | | | | 15 | |

<210> 85

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 85

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Gln | Lys | Asn | Pro | Ser | Trp | Ser | Val | Asn | Gln | Ile | Arg | Asn | His |
| 1 | | | | 5 | | | | | 10 | | | | 15 | |

<210> 86

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 86

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Pro | Ser | Trp | Ser | Asn | Val | Gln | Ile | Arg | Asn | His | Leu | Lys | Asn |
| 1 | | | | 5 | | | | | 10 | | | | 15 | |

<210> 87

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 87

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Trp | Ser | Asn | Val | Gln | Ile | Arg | Asn | His | Leu | Lys | Asn | Thr | Ala | Thr |
| 1 | | | | 5 | | | | | 10 | | | | 15 | |

<210> 88

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 88

Val Gln Ile Arg Asn His Leu Lys Asn Thr Ala Thr Ser Leu Gly
1 5 10 15

<210> 89

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 89

Arg Asn His Leu Lys Asn Thr Ala Thr Ser Leu Gly Ser Thr Asn
1 5 10 15

<210> 90

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 90

Leu Lys Asn Thr Ala Thr Ser Leu Gly Ser Thr Asn Leu Tyr Gly
1 5 10 15

<210> 91

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 91

Thr Ala Thr Ser Leu Gly Ser Thr Asn Leu Tyr Gly Ser Gly Leu
1 5 10 15

<210> 92
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 92
Ser Leu Gly Ser Thr Asn Leu Tyr Gly Ser Gly Leu Val Asn Ala
1 5 10 15

<210> 93
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 93
Ser Thr Asn Leu Tyr Gly Ser Gly Leu Val Asn Ala Glu Ala Ala
1 5 10 15

<210> 94
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 94
Asn Leu Tyr Gly Ser Gly Leu Val Asn Ala Glu Ala Ala Thr Arg
1 5 10 15

<210> 95
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 95

Asp Ala Glu Leu His Ile Phe Arg Val Phe Thr Asn Asn Gln Val
1 5 10 15

<210> 96

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 96

Pro Leu Arg Arg Ala Ser Leu Ser Leu Gly Ser Gly Phe Trp His
1 5 10 15

<210> 97

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 97

Arg Ala Ser Leu Ser Leu Gly Ser Gly Phe Trp His Ala Thr Gly
1 5 10 15

<210> 98

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 98

Leu Ser Leu Gly Ser Gly Phe Trp His Ala Thr Gly Arg His Ser
1 5 10 15

<210> 99

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 99

Gly Ser Gly Phe Trp His Ala Thr Gly Arg His Ser Ser Arg Arg
1 5 10 15

<210> 100

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 100

Phe Trp His Ala Thr Gly Arg His Ser Ser Arg Arg Leu Leu Arg
1 5 10 15

<210> 101

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 101

Ala Thr Gly Arg His Ser Ser Arg Arg Leu Leu Arg Ala Ile Pro
1 5 10 15

<210> 102

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 102

Arg His Ser Ser Arg Arg Leu Leu Arg Ala Ile Pro Arg Gln Val
1 5 10 15

<210> 103
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 103
Ser Arg Arg Leu Leu Arg Ala Ile Pro Arg Gln Val Ala Gln Thr
1 5 10 15

<210> 104
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 104
Leu Leu Arg Ala Ile Pro Arg Gln Val Ala Gln Thr Leu Gln Ala
1 5 10 15

<210> 105
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 105
Ala Ile Pro Arg Gln Val Ala Gln Thr Leu Gln Ala Asp Val Leu
1 5 10 15

<210> 106
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 106

Arg Gln Val Ala Gln Thr Leu Gln Ala Asp Val Leu Trp Gln Met
1 5 10 15

<210> 107

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 107

Ala Gln Thr Leu Gln Ala Asp Val Leu Trp Gln Met Gly Tyr Thr
1 5 10 15

<210> 108

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 108

Leu Gln Ala Asp Val Leu Trp Gln Met Gly Tyr Thr Gly Ala Asn
1 5 10 15

<210> 109

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 109

Asp Val Leu Trp Gln Met Gly Tyr Thr Gly Ala Asn Val Arg Val
1 5 10 15

<210> 110

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 110

Trp Gln Met Gly Tyr Thr Gly Ala Asn Val Arg Val Ala Val Phe
1 5 10 15

<210> 111

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 111

Gly Tyr Thr Gly Ala Asn Val Arg Val Ala Val Phe Asp Thr Gly
1 5 10 15

<210> 112

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 112

Gly Ala Asn Val Arg Val Ala Val Phe Asp Thr Gly Leu Ser Glu
1 5 10 15

<210> 113

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 113

Val Arg Val Ala Val Phe Asp Thr Gly Leu Ser Glu Lys His Pro
1 5 10 15

<210> 114
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 114
Ala Val Phe Asp Thr Gly Leu Ser Glu Lys His Pro His Phe Lys
1 5 10 15

<210> 115
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 115
Asp Thr Gly Leu Ser Glu Lys His Pro His Phe Lys Asn Val Lys
1 5 10 15

<210> 116
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 116
Leu Ser Glu Lys His Pro His Phe Lys Asn Val Lys Glu Arg Thr
1 5 10 15

<210> 117
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 117

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | His | Pro | His | Phe | Lys | Asn | Val | Lys | Glu | Arg | Thr | Asn | Trp | Thr |
| 1 | | | | | 5 | | | | 10 | | | | | 15 |

<210> 118
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| His | Phe | Lys | Asn | Val | Lys | Glu | Arg | Thr | Asn | Trp | Thr | Asn | Glu | Arg |
| 1 | | | | | 5 | | | | 10 | | | | | 15 |

<210> 119
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Val | Lys | Glu | Arg | Thr | Asn | Trp | Thr | Asn | Glu | Arg | Thr | Leu | Asp |
| 1 | | | | | 5 | | | | 10 | | | | | 15 |

<210> 120
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Arg | Thr | Asn | Trp | Thr | Asn | Glu | Arg | Thr | Leu | Asp | Asp | Gly | Leu |
| 1 | | | | | 5 | | | | 10 | | | | | 15 |

<210> 121
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 121

Asn Trp Thr Asn Glu Arg Thr Leu Asp Asp Gly Leu Gly His Gly
1 5 10 15

<210> 122

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 122

Asn Glu Arg Thr Leu Asp Asp Gly Leu Gly His Gly Thr Phe Val
1 5 10 15

<210> 123

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 123

Thr Leu Asp Asp Gly Leu Gly His Gly Thr Phe Val Ala Gly Val
1 5 10 15

<210> 124

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 124

Asp Gly Leu Gly His Gly Thr Phe Val Ala Gly Val Ile Ala Ser
1 5 10 15

<210> 125

<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 125
Gly His Gly Thr Phe Val Ala Gly Val Ile Ala Ser Met Arg Glu
1 5 10 15

<210> 126
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 126
Thr Phe Val Ala Gly Val Ile Ala Ser Met Arg Glu Cys Gln Gly
1 5 10 15

<210> 127
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 127
Ala Gly Val Ile Ala Ser Met Arg Glu Cys Gln Gly Phe Ala Pro
1 5 10 15

<210> 128
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 128
Ile Ala Ser Met Arg Glu Cys Gln Gly Phe Ala Pro Asp Ala Glu

| | | | |
|---|---|----|----|
| 1 | 5 | 10 | 15 |
|---|---|----|----|

<210> 129
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic

<400> 129
 Met Arg Glu Cys Gln Gly Phe Ala Pro Asp Ala Glu Leu His Ile
 1 5 10 15

<210> 130
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic

<400> 130
 Cys Gln Gly Phe Ala Pro Asp Ala Glu Leu His Ile Phe Arg Val
 1 5 10 15

<210> 131
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic

<400> 131
 Phe Ala Pro Asp Ala Glu Leu His Ile Phe Arg Val Phe Thr Asn
 1 5 10 15

<210> 132
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 132

Asp Ala Glu Leu His Ile Phe Arg Val Phe Thr Asn Asn Gln Val
1 5 10 15

<210> 133

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 133

Leu His Ile Phe Arg Val Phe Thr Asn Asn Gln Val Ser Tyr Thr
1 5 10 15

<210> 134

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 134

Phe Arg Val Phe Thr Asn Asn Gln Val Ser Tyr Thr Ser Trp Phe
1 5 10 15

<210> 135

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 135

Phe Thr Asn Asn Gln Val Ser Tyr Thr Ser Trp Phe Leu Asp Ala
1 5 10 15

<210> 136

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 136

Asn Gln Val Ser Tyr Thr Ser Trp Phe Leu Asp Ala Phe Asn Tyr
1 5 10 15

<210> 137

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 137

Ser Tyr Thr Ser Trp Phe Leu Asp Ala Phe Asn Tyr Ala Ile Leu
1 5 10 15

<210> 138

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 138

Ser Trp Phe Leu Asp Ala Phe Asn Tyr Ala Ile Leu Lys Lys Ile
1 5 10 15

<210> 139

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 139

Leu Asp Ala Phe Asn Tyr Ala Ile Leu Lys Lys Ile Asp Val Leu
1 5 10 15

<210> 140

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 140

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Asn | Tyr | Ala | Ile | Leu | Lys | Lys | Ile | Asp | Val | Leu | Asn | Leu | Ser |
| 1 | | | | 5 | | | | 10 | | | | | 15 | |

<210> 141

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 141

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Ile | Leu | Lys | Lys | Ile | Asp | Val | Leu | Asn | Leu | Ser | Ile | Gly | Gly |
| 1 | | | | 5 | | | | 10 | | | | | 15 | |

<210> 142

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 142

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Lys | Ile | Asp | Val | Leu | Asn | Leu | Ser | Ile | Gly | Gly | Pro | Asp | Phe |
| 1 | | | | 5 | | | | 10 | | | | | 15 | |

<210> 143

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 143

Asp Val Leu Asn Leu Ser Ile Gly Gly Pro Asp Phe Met Asp His
1 5 10 15

<210> 144

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 144

Asn Leu Ser Ile Gly Gly Pro Asp Phe Met Asp His Pro Phe Val
1 5 10 15

<210> 145

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 145

Ile Gly Gly Pro Asp Phe Met Asp His Pro Phe Val Asp Lys Val
1 5 10 15

<210> 146

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 146

Pro Asp Phe Met Asp His Pro Phe Val Asp Lys Val Trp Glu Leu
1 5 10 15

<210> 147

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 147

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Asp | His | Pro | Phe | Val | Asp | Lys | Val | Trp | Glu | Leu | Thr | Ala | Asn |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |

<210> 148

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 148

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Phe | Val | Asp | Lys | Val | Trp | Glu | Leu | Thr | Ala | Asn | Asn | Val | Ile |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |

<210> 149

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 149

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Lys | Val | Trp | Glu | Leu | Thr | Ala | Asn | Asn | Val | Ile | Met | Val | Ser |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |

<210> 150

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 150

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Trp | Glu | Leu | Thr | Ala | Asn | Asn | Val | Ile | Met | Val | Ser | Ala | Ile | Gly |
| 1 | | | | 5 | | | | | 10 | | | | | 15 |

<210> 151
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 151
Thr Ala Asn Asn Val Ile Met Val Ser Ala Ile Gly Asn Asp Gly
1 5 10 15

<210> 152
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 152
Asn Val Ile Met Val Ser Ala Ile Gly Asn Asp Gly Pro Leu Tyr
1 5 10 15

<210> 153
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 153
Met Val Ser Ala Ile Gly Asn Asp Gly Pro Leu Tyr Gly Thr Ile
1 5 10 15

<210> 154
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 154

Ala Ile Gly Asn Asp Gly Pro Leu Tyr Gly Thr Leu Asn Asn Pro
1 5 10 15

<210> 155

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 155

Asn Asp Gly Pro Leu Tyr Gly Thr Leu Asn Asn Pro Ala Asp Gln
1 5 10 15

<210> 156

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 156

Pro Leu Tyr Gly Thr Leu Asn Asn Pro Ala Asp Gln Met Asp Val
1 5 10 15

<210> 157

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 157

Gly Thr Leu Asn Asn Pro Ala Asp Gln Met Asp Val Ile Gly Val
1 5 10 15

<210> 158

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 158

Asn Asn Pro Ala Asp Gln Met Asp Val Ile Gly Val Gly Gly Ile
1 5 10 15

<210> 159

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 159

Ala Asp Gln Met Asp Val Ile Gly Val Gly Gly Ile Asp Phe Glu
1 5 10 15

<210> 160

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 160

Met Asp Val Ile Gly Val Gly Gly Ile Asp Phe Glu Asp Asn Ile
1 5 10 15

<210> 161

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 161

Ile Gly Val Gly Gly Ile Asp Phe Glu Asp Asn Ile Ala Arg Phe
1 5 10 15

<210> 162
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 162
Gly Gly Ile Asp Phe Glu Asp Asn Ile Ala Arg Phe Ser Ser Arg
1 5 10 15

<210> 163
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 163
Asp Phe Glu Asp Asn Ile Ala Arg Phe Ser Ser Arg Gly Met Thr
1 5 10 15

<210> 164
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 164
Asp Asn Ile Ala Arg Phe Ser Ser Arg Gly Met Thr Thr Trp Glu
1 5 10 15

<210> 165
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 165

Ala Arg Phe Ser Ser Arg Gly Met Thr Thr Trp Glu Leu Pro Gly
1 5 10 15

<210> 166

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 166

Ser Ser Arg Gly Met Thr Thr Trp Glu Leu Pro Gly Gly Tyr Gly
1 5 10 15

<210> 167

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 167

Gly Met Thr Thr Trp Glu Leu Pro Gly Gly Tyr Gly Arg Met Lys
1 5 10 15

<210> 168

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 168

Thr Trp Glu Leu Pro Gly Gly Tyr Gly Arg Met Lys Pro Asp Ile
1 5 10 15

<210> 169

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 169

Leu Pro Gly Gly Tyr Gly Arg Met Lys Pro Asp Ile Val Thr Tyr
1 5 10 15

<210> 170

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 170

Gly Tyr Gly Arg Met Lys Pro Asp Ile Val Thr Tyr Gly Ala Gly
1 5 10 15

<210> 171

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 171

Arg Met Lys Pro Asp Ile Val Thr Tyr Gly Ala Gly Val Arg Gly
1 5 10 15

<210> 172

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 172

Pro Asp Ile Val Thr Tyr Gly Ala Gly Val Arg Gly Ser Gly Val
1 5 10 15

<210> 173

<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 173
Val Thr Tyr Gly Ala Gly Val Arg Gly Ser Gly Val Lys Gly Gly
1 5 10 15

<210> 174
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 174
Gly Ala Gly Val Arg Gly Ser Gly Val Lys Gly Gly Cys Arg Ala
1 5 10 15

<210> 175
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 175
Val Arg Gly Ser Gly Val Lys Gly Gly Cys Arg Ala Leu Ser Gly
1 5 10 15

<210> 176
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 176
Ser Gly Val Lys Gly Gly Cys Arg Ala Leu Ser Gly Thr Ser Val

| | | | |
|---|---|----|----|
| 1 | 5 | 10 | 15 |
|---|---|----|----|

<210> 177
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic

<400> 177
 Lys Gly Gly Cys Arg Ala Leu Ser Gly Thr Ser Val Ala Ser Pro
 1 5 10 15

<210> 178
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic

<400> 178
 Cys Arg Ala Leu Ser Gly Thr Ser Val Ala Ser Pro Val Val Ala
 1 5 10 15

<210> 179
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic

<400> 179
 Leu Ser Gly Thr Ser Val Ala Ser Pro Val Val Ala Gly Ala Val
 1 5 10 15

<210> 180
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 180

Thr Ser Val Ala Ser Pro Val Val Ala Gly Ala Val Thr Leu Leu
1 5 10 15

<210> 181

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 181

Ala Ser Pro Val Val Ala Gly Ala Val Thr Leu Leu Val Ser Thr
1 5 10 15

<210> 182

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 182

Val Val Ala Gly Ala Val Thr Leu Leu Val Ser Thr Val Gln Lys
1 5 10 15

<210> 183

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 183

Gly Ala Val Thr Leu Leu Val Ser Thr Val Gln Lys Arg Glu Leu
1 5 10 15

<210> 184

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 184

Thr Leu Leu Val Ser Thr Val Gln Lys Arg Glu Leu Val Asn Pro
1 5 10 15

<210> 185

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 185

Val Ser Thr Val Gln Lys Arg Glu Leu Val Asn Pro Ala Ser Met
1 5 10 15

<210> 186

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 186

Val Gln Lys Arg Glu Leu Val Asn Pro Ala Ser Met Lys Gln Ala
1 5 10 15

<210> 187

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 187

Arg Glu Leu Val Asn Pro Ala Ser Met Lys Gln Ala Leu Ile Ala
1 5 10 15

<210> 188
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 188
Val Asn Pro Ala Ser Met Lys Gln Ala Leu Ile Ala Ser Ala Arg
1 5 10 15

<210> 189
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 189
Ala Ser Met Lys Gln Ala Leu Ile Ala Ser Ala Arg Arg Leu Pro
1 5 10 15

<210> 190
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 190
Lys Gln Ala Leu Ile Ala Ser Ala Arg Arg Leu Pro Gly Val Asn
1 5 10 15

<210> 191
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 191

Leu Ile Ala Ser Ala Arg Arg Leu Pro Gly Val Asn Met Phe Glu
1 5 10 15

<210> 192

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 192

Ser Ala Arg Arg Leu Pro Gly Val Asn Met Phe Glu Gln Gly His
1 5 10 15

<210> 193

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 193

Arg Leu Pro Gly Val Asn Met Phe Glu Gln Gly His Gly Lys Leu
1 5 10 15

<210> 194

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 194

Gly Val Asn Met Phe Glu Gln Gly His Gly Lys Leu Asp Leu Leu
1 5 10 15

<210> 195

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 195

Met Phe Glu Gln Gly His Gly Lys Leu Asp Leu Leu Arg Ala Tyr
1 5 10 15

<210> 196

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 196

Gln Gly His Gly Lys Leu Asp Leu Leu Arg Ala Tyr Gln Ile Leu
1 5 10 15

<210> 197

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 197

Gly Lys Leu Asp Leu Leu Arg Ala Tyr Gln Ile Leu Asn Ser Tyr
1 5 10 15

<210> 198

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 198

Asp Leu Leu Arg Ala Tyr Gln Ile Leu Asn Ser Tyr Lys Pro Gln
1 5 10 15

<210> 199
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 199
Arg Ala Tyr Gln Ile Leu Asn Ser Tyr Lys Pro Gln Ala Ser Leu
1 5 10 15

<210> 200
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 200
Gln Ile Leu Asn Ser Tyr Lys Pro Gln Ala Ser Leu Ser Pro Ser
1 5 10 15

<210> 201
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 201
Asn Ser Tyr Lys Pro Gln Ala Ser Leu Ser Pro Ser Tyr Ile Asp
1 5 10 15

<210> 202
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 202

Lys Pro Gln Ala Ser Leu Ser Pro Ser Tyr Ile Asp Leu Thr Glu
1 5 10 15

<210> 203

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 203

Ala Ser Leu Ser Pro Ser Tyr Ile Asp Leu Thr Glu Cys Pro Tyr
1 5 10 15

<210> 204

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 204

Ser Pro Ser Tyr Ile Asp Leu Thr Glu Cys Pro Tyr Met Trp Pro
1 5 10 15

<210> 205

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 205

Tyr Ile Asp Leu Thr Glu Cys Pro Tyr Met Trp Pro Tyr Cys Ser
1 5 10 15

<210> 206

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 206

Leu Thr Glu Cys Pro Tyr Met Trp Pro Tyr Cys Ser Gln Pro Ile
1 5 10 15

<210> 207

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 207

Cys Pro Tyr Met Trp Pro Tyr Cys Ser Gln Pro Ile Tyr Tyr Gly
1 5 10 15

<210> 208

<211> 1052

<212> PRT

<213> Homo sapiens

<400> 208

Met Lys Leu Val Asn Ile Trp Leu Leu Leu Leu Val Val Leu Leu Cys
1 5 10 15

Gly Lys Lys His Leu Gly Asp Arg Leu Glu Lys Lys Ser Phe Glu Lys
20 25 30

Ala Pro Cys Pro Gly Cys Ser His Leu Thr Leu Lys Val Glu Phe Ser
35 40 45

Ser Thr Val Val Glu Tyr Glu Tyr Ile Val Ala Phe Asn Gly Tyr Phe
50 55 60

Thr Ala Lys Ala Arg Asn Ser Phe Ile Ser Ser Ala Leu Lys Ser Ser
65 70 75 80

Glu Val Asp Asn Trp Arg Ile Ile Pro Arg Asn Asn Pro Ser Ser Asp
85 90 95

Tyr Pro Ser Asp Phe Glu Val Ile Gln Ile Lys Glu Lys Gln Lys Ala
100 105 110

Gly Leu Leu Thr Leu Glu Asp His Pro Asn Ile Lys Arg Val Thr Pro
115 120 125

Gln Arg Lys Val Phe Arg Ser Leu Lys Tyr Ala Glu Ser Asp Pro Thr
130 135 140

Val Pro Cys Asn Glu Thr Arg Trp Ser Gln Lys Trp Gln Ser Ser Arg
145 150 155 160

Pro Leu Arg Arg Ala Ser Leu Ser Leu Gly Ser Gly Phe Trp His Ala
165 170 175

Thr Gly Arg His Ser Ser Arg Arg Leu Leu Arg Ala Ile Pro Arg Gln
180 185 190

Val Ala Gln Thr Leu Gln Ala Asp Val Leu Trp Gln Met Gly Tyr Thr
195 200 205

Gly Ala Asn Val Arg Val Ala Val Phe Asp Thr Gly Leu Ser Glu Lys
210 215 220

His Pro His Phe Lys Asn Val Lys Glu Arg Thr Asn Trp Thr Asn Glu
225 230 235 240

Arg Thr Leu Asp Asp Gly Leu Gly His Gly Thr Phe Val Ala Gly Val
245 250 255

Ile Ala Ser Met Arg Glu Cys Gln Gly Phe Ala Pro Asp Ala Glu Leu
260 265 270

His Ile Phe Arg Val Phe Thr Asn Asn Gln Val Ser Tyr Thr Ser Trp
275 280 285

Phe Leu Asp Ala Phe Asn Tyr Ala Ile Leu Lys Lys Ile Asp Val Leu
290 295 300

Asn Leu Ser Ile Gly Gly Pro Asp Phe Met Asp His Pro Phe Val Asp
305 310 315 320

Lys Val Trp Glu Leu Thr Ala Asn Asn Val Ile Met Val Ser Ala Ile
325 330 335

Gly Asn Asp Gly Pro Leu Tyr Gly Thr Leu Asn Asn Pro Ala Asp Gln
340 345 350

Met Asp Val Ile Gly Val Gly Gly Ile Asp Phe Glu Asp Asn Ile Ala
355 360 365

Arg Phe Ser Ser Arg Gly Met Thr Thr Trp Glu Leu Pro Gly Gly Tyr
 370 375 380

Gly Arg Met Lys Pro Asp Ile Val Thr Tyr Gly Ala Gly Val Arg Gly
 385 390 395 400

Ser Gly Val Lys Gly Gly Cys Arg Ala Leu Ser Gly Thr Ser Val Ala
 405 410 415

Ser Pro Val Val Ala Gly Ala Val Thr Leu Leu Val Ser Thr Val Gln
 420 425 430

Lys Arg Glu Leu Val Asn Pro Ala Ser Met Lys Gln Ala Leu Ile Ala
 435 440 445

Ser Ala Arg Arg Leu Pro Gly Val Asn Met Phe Glu Gln Gly His Gly
 450 455 460

Lys Leu Asp Leu Leu Arg Ala Tyr Gln Ile Leu Asn Ser Tyr Lys Pro
 465 470 475 480

Gln Ala Ser Leu Ser Pro Ser Tyr Ile Asp Leu Thr Glu Cys Pro Tyr
 485 490 495

Met Trp Pro Tyr Cys Ser Gln Pro Ile Tyr Tyr Gly Gly Met Pro Thr
 500 505 510

Val Val Asn Val Thr Ile Leu Asn Gly Met Gly Val Thr Gly Arg Ile
 515 520 525

Val Asp Lys Pro Asp Trp Gln Pro Tyr Leu Pro Gln Asn Gly Asp Asn
 530 535 540

Ile Glu Val Ala Phe Ser Tyr Ser Ser Val Leu Trp Pro Trp Ser Gly
 545 550 555 560

Tyr Leu Ala Ile Ser Ile Ser Val Thr Lys Lys Ala Ala Ser Trp Glu
 565 570 575

Gly Ile Ala Gln Gly His Val Met Ile Thr Val Ala Ser Pro Ala Glu
 580 585 590

Thr Glu Ser Lys Asn Gly Ala Glu Gln Thr Ser Thr Val Lys Leu Pro
 595 600 605

Ile Lys Val Lys Ile Ile Pro Thr Pro Pro Arg Ser Lys Arg Val Leu
 610 615 620

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Trp | Asp | Gln | Tyr | His | Asn | Leu | Arg | Tyr | Pro | Pro | Gly | Tyr | Phe | Pro | Arg | 625 | 630 | 635 | 640 |
| Asp | Asn | Leu | Arg | Met | Lys | Asn | Asp | Pro | Leu | Asp | Trp | Asn | Gly | Asp | His | 645 | 650 | 655 | |
| Ile | His | Thr | Asn | Phe | Arg | Asp | Met | Tyr | Gln | His | Leu | Arg | Ser | Met | Gly | 660 | 665 | 670 | |
| Tyr | Phe | Val | Glu | Val | Leu | Gly | Ala | Pro | Phe | Thr | Cys | Phe | Asp | Ala | Ser | 675 | 680 | 685 | |
| Gln | Tyr | Gly | Thr | Leu | Leu | Met | Val | Asp | Ser | Glu | Glu | Glu | Tyr | Phe | Pro | 690 | 695 | 700 | |
| Glu | Glu | Ile | Ala | Lys | Leu | Arg | Arg | Asp | Val | Asp | Asn | Gly | Leu | Ser | Leu | 705 | 710 | 715 | 720 |
| Val | Ile | Phe | Ser | Asp | Trp | Tyr | Asn | Thr | Ser | Val | Met | Arg | Lys | Val | Lys | 725 | 730 | 735 | |
| Phe | Tyr | Asp | Glu | Asn | Thr | Arg | Gln | Trp | Trp | Met | Pro | Asp | Thr | Gly | Gly | 740 | 745 | 750 | |
| Ala | Asn | Ile | Pro | Ala | Leu | Asn | Glu | Leu | Leu | Ser | Val | Trp | Asn | Met | Gly | 755 | 760 | 765 | |
| Phe | Ser | Asp | Gly | Leu | Tyr | Glu | Gly | Glu | Phe | Thr | Leu | Ala | Asn | His | Asp | 770 | 775 | 780 | |
| Met | Tyr | Tyr | Ala | Ser | Gly | Cys | Ser | Ile | Ala | Lys | Phe | Pro | Glu | Asp | Gly | 785 | 790 | 795 | 800 |
| Val | Val | Ile | Thr | Gln | Thr | Phe | Lys | Asp | Gln | Gly | Leu | Glu | Val | Leu | Lys | 805 | 810 | 815 | |
| Gln | Glu | Thr | Ala | Val | Val | Glu | Asn | Val | Pro | Ile | Leu | Gly | Leu | Tyr | Gln | 820 | 825 | 830 | |
| Ile | Pro | Ala | Glu | Gly | Gly | Gly | Arg | Ile | Val | Leu | Tyr | Gly | Asp | Ser | Asn | 835 | 840 | 845 | |
| Cys | Leu | Asp | Asp | Ser | His | Arg | Gln | Lys | Asp | Cys | Phe | Trp | Leu | Leu | Asp | 850 | 855 | 860 | |
| Ala | Leu | Leu | Gln | Tyr | Thr | Ser | Tyr | Gly | Val | Thr | Pro | Pro | Ser | Leu | Ser | 865 | 870 | 875 | 880 |

His Ser Gly Asn Arg Gln Arg Pro Pro Ser Gly Ala Gly Ser Val Thr
885 890 895

Pro Glu Arg Met Glu Gly Asn His Leu His Arg Tyr Ser Lys Val Leu
900 905 910

Glu Ala His Leu Gly Asp Pro Lys Pro Arg Pro Leu Pro Ala Cys Pro
915 920 925

Arg Leu Ser Trp Ala Lys Pro Gln Pro Leu Asn Glu Thr Ala Pro Ser
930 935 940

Asn Leu Trp Lys His Gln Lys Leu Leu Ser Ile Asp Leu Asp Lys Val
945 950 955 960

Val Leu Pro Asn Phe Arg Ser Asn Arg Pro Gln Val Arg Pro Leu Ser
965 970 975

Pro Gly Glu Ser Gly Ala Trp Asp Ile Pro Gly Gly Ile Met Pro Gly
980 985 990

Arg Tyr Asn Gln Glu Val Gly Gln Thr Ile Pro Val Phe Ala Phe Leu
995 1000 1005

Gly Ala Met Val Val Leu Ala Phe Phe Val Val Gln Ile Asn Lys Ala
1010 1015 1020

Lys Ser Arg Pro Lys Arg Arg Lys Pro Arg Val Lys Arg Pro Gln Leu
1025 1030 1035 1040

Met Gln Gln Val His Pro Pro Lys Thr Pro Ser Val
1045 1050

<210> 209

<211> 280

<212> PRT

<213> Homo sapiens

<400> 209

Arg Ala Ile Pro Arg Gln Val Ala Gln Thr Leu Gln Ala Asp Val Leu
1 5 10 15

Trp Gln Met Gly Tyr Thr Gly Ala Asn Val Arg Val Ala Val Phe Asp
20 25 30

Thr Gly Leu Ser Glu Lys His Pro His Phe Lys Asn Val Lys Glu Arg

| | | |
|---|-----|---------|
| 35 | 40 | 45 |
| Thr Asn Trp Thr Asn Glu Arg Thr Leu Asp Asp Gly Leu Gly His Gly | | |
| 50 | 55 | 60 |
| Thr Phe Val Ala Gly Val Ile Ala Ser Met Arg Glu Cys Gln Gly Phe | | |
| 65 | 70 | 75 80 |
| Ala Pro Asp Ala Glu Leu His Ile Phe Arg Val Phe Thr Asn Asn Gln | | |
| 85 | 90 | 95 |
| Val Ser Tyr Thr Ser Trp Phe Leu Asp Ala Phe Asn Tyr Ala Ile Leu | | |
| 100 | 105 | 110 |
| Lys Lys Ile Asp Val Leu Asn Leu Ser Ile Gly Gly Pro Asp Phe Met | | |
| 115 | 120 | 125 |
| Asp His Pro Phe Val Asp Lys Val Trp Glu Leu Thr Ala Asn Asn Val | | |
| 130 | 135 | 140 |
| Ile Met Val Ser Ala Ile Gly Asn Asp Gly Pro Leu Tyr Gly Thr Leu | | |
| 145 | 150 | 155 160 |
| Asn Asn Pro Ala Asp Gln Met Asp Val Ile Gly Val Gly Gly Ile Asp | | |
| 165 | 170 | 175 |
| Phe Glu Asp Asn Ile Ala Arg Phe Ser Ser Arg Gly Met Thr Thr Trp | | |
| 180 | 185 | 190 |
| Glu Leu Pro Gly Gly Tyr Gly Arg Met Lys Pro Asp Ile Val Thr Tyr | | |
| 195 | 200 | 205 |
| Gly Ala Gly Val Arg Gly Ser Gly Val Lys Gly Gly Cys Arg Ala Leu | | |
| 210 | 215 | 220 |
| Ser Gly Thr Ser Val Ala Ser Pro Val Val Ala Gly Ala Val Thr Leu | | |
| 225 | 230 | 235 240 |
| Leu Val Ser Thr Val Gln Lys Arg Glu Leu Val Asn Pro Ala Ser Met | | |
| 245 | 250 | 255 |
| Lys Gln Ala Leu Ile Ala Ser Ala Arg Arg Leu Pro Gly Val Asn Met | | |
| 260 | 265 | 270 |
| Phe Glu Gln Gly His Gly Lys Leu | | |
| 275 | 280 | |

<210> 210
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 210
Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val
1 5 10 15

<210> 211
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 211
Ala Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val
1 5 10 15

<210> 212
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 212
Gly Ala Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val
1 5 10 15

<210> 213
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 213

Gly Ser Ala Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val
1 5 10 15

<210> 214
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 214
Gly Ser Ile Ala Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val
1 5 10 15

<210> 215
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 215
Gly Ser Ile Ser Ala Pro Ala Arg Tyr Ala Asn Ala Met Ala Val
1 5 10 15

<210> 216
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 216
Gly Ser Ile Ser Tyr Ala Ala Arg Tyr Ala Asn Ala Met Ala Val
1 5 10 15

<210> 217
<211> 15
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 217

Gly Ser Ile Ser Tyr Pro Ala Ala Tyr Ala Asn Ala Met Ala Val
1 5 10 15

<210> 218

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 218

Gly Ser Ile Ser Tyr Pro Ala Arg Ala Ala Asn Ala Met Ala Val
1 5 10 15

<210> 219

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 219

Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Ala Ala Met Ala Val
1 5 10 15

<210> 220

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic

<400> 220

Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Ala Ala Val
1 5 10 15

<210> 221

<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic

<400> 221
Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Ala
1 5 10 15

<210> 222
<211> 15
<212> PRT
<213> Humicola insolens

<400> 222
Pro Gly Gly Val Ala Tyr Ser Cys Ala Asp Gln Thr Pro Trp Ala
1 5 10 15

<210> 223
<211> 15
<212> PRT
<213> Humicola insolens

<400> 223
Cys Gly Trp Ala Lys Lys Ala Pro Val Asn Gln Pro Val Phe Ser
1 5 10 15

<210> 224
<211> 276
<212> PRT
<213> Humicola insolens

<400> 224
Met Arg Ser Ser Pro Leu Leu Pro Ser Ala Val Val Ala Ala Leu Pro
1 5 10 15

Val Leu Ala Leu Ala Ala Asp Gly Arg Ser Thr Arg Tyr Trp Asp Cys
20 25 30

Cys Lys Pro Ser Cys Gly Trp Ala Lys Lys Ala Pro Val Asn Gln Pro
35 40 45

Val Phe Ser Cys Asn Ala Asn Phe Gln Arg Ile Thr Asp Phe Asp Ala

| | | | | |
|---|-----|----|-----|---------|
| 50 | | 55 | | 60 |
| Lys Ser Gly Cys Glu Pro Gly Gly Val Ala Tyr Ser Cys Ala Asp Gln | | | | |
| 65 | | 70 | | 75 80 |
| Thr Pro Trp Ala Val Asn Asp Asp Phe Ala Leu Gly Phe Ala Ala Thr | | | | |
| | 85 | | 90 | 95 |
| Ser Ile Ala Gly Ser Asn Glu Ala Gly Trp Cys Cys Ala Cys Tyr Glu | | | | |
| | 100 | | 105 | 110 |
| Leu Thr Phe Thr Ser Gly Pro Val Ala Gly Lys Lys Met Val Val Gln | | | | |
| | 115 | | 120 | 125 |
| Ser Thr Ser Thr Gly Gly Asp Leu Gly Ser Asn His Phe Asp Leu Asn | | | | |
| | 130 | | 135 | 140 |
| Ile Pro Gly Gly Gly Val Gly Ile Phe Asp Gly Cys Thr Pro Gln Phe | | | | |
| | 145 | | 150 | 155 160 |
| Gly Gly Leu Pro Gly Gln Arg Tyr Gly Gly Ile Ser Ser Arg Asn Glu | | | | |
| | 165 | | 170 | 175 |
| Cys Asp Arg Phe Pro Asp Ala Leu Lys Pro Gly Cys Tyr Trp Arg Phe | | | | |
| | 180 | | 185 | 190 |
| Asp Trp Phe Lys Asn Ala Asp Asn Pro Ser Phe Ser Phe Arg Gln Val | | | | |
| | 195 | | 200 | 205 |
| Gln Cys Pro Ala Glu Leu Val Ala Arg Thr Gly Cys Arg Arg Asn Asp | | | | |
| | 210 | | 215 | 220 |
| Asp Gly Asn Phe Pro Ala Val Gln Ile Pro Ser Ser Ser Thr Ser Ser | | | | |
| | 225 | | 230 | 235 240 |
| Pro Val Asn Gln Pro Thr Ser Thr Ser Thr Thr Ser Thr Ser Thr Thr | | | | |
| | 245 | | 250 | 255 |
| Ser Ser Pro Pro Val Gln Pro Thr Thr Pro Ser Gly Cys Thr Ala Glu | | | | |
| | 260 | | 265 | 270 |
| Arg Trp Ala Gln | | | | |
| | 275 | | | |

<210> 225

<211> 18

<212> PRT

<213> Thermomyces lanuginosus

<400> 225

Gly Asp Val Thr Gly Phe Leu Ala Leu Asp Asn Thr Asn Lys Leu Ile
1 5 10 15

Val Leu

<210> 226

<211> 15

<212> PRT

<213> Thermomyces lanuginosus

<400> 226

Ser Ile Glu Asn Trp Ile Gly Asn Leu Asn Phe Asp Leu Lys Glu
1 5 10 15

<210> 227

<211> 291

<212> PRT

<213> Thermomyces lanuginosus

<400> 227

Met Arg Ser Ser Leu Val Leu Phe Phe Val Ser Ala Trp Thr Ala Leu
1 5 10 15

Ala Ser Pro Ile Arg Arg Glu Val Ser Gln Asp Leu Phe Asn Gln Phe
20 25 30

Asn Leu Phe Ala Gln Tyr Ser Ala Ala Ala Tyr Cys Gly Lys Asn Asn
35 40 45

Asp Ala Pro Ala Gly Thr Asn Ile Thr Cys Thr Gly Asn Ala Cys Pro
50 55 60

Glu Val Glu Lys Ala Asp Ala Thr Phe Leu Tyr Ser Phe Glu Asp Ser
65 70 75 80

Gly Val Gly Asp Val Thr Gly Phe Leu Ala Leu Asp Asn Thr Asn Lys
85 90 95

Leu Ile Val Leu Ser Phe Arg Gly Ser Arg Ser Ile Glu Asn Trp Ile
100 105 110

Gly Asn Leu Asn Phe Asp Leu Lys Glu Ile Asn Asp Ile Cys Ser Gly

| | | |
|---|-----|-----|
| 115 | 120 | 125 |
| Cys Arg Gly His Asp Gly Phe Thr Ser Ser Trp Arg Ser Val Ala Asp | | |
| 130 | 135 | 140 |
| Thr Leu Arg Gln Lys Val Glu Asp Ala Val Arg Glu His Pro Asp Tyr | | |
| 145 | 150 | 155 |
| | | 160 |
| Arg Val Val Phe Thr Gly His Ser Leu Gly Gly Ala Leu Ala Thr Val | | |
| | 165 | 170 |
| | | 175 |
| Ala Gly Ala Asp Leu Arg Gly Asn Gly Tyr Asp Ile Asp Val Phe Ser | | |
| | 180 | 185 |
| | | 190 |
| Tyr Gly Ala Pro Arg Val Gly Asn Arg Ala Phe Ala Glu Phe Leu Thr | | |
| 195 | 200 | 205 |
| Val Gln Thr Gly Gly Thr Leu Tyr Arg Ile Thr His Thr Asn Asp Ile | | |
| 210 | 215 | 220 |
| Val Pro Arg Leu Pro Pro Arg Glu Phe Gly Tyr Ser His Ser Ser Pro | | |
| 225 | 230 | 235 |
| | | 240 |
| Glu Tyr Trp Ile Lys Ser Gly Thr Leu Val Pro Val Thr Arg Asn Asp | | |
| | 245 | 250 |
| | | 255 |
| Ile Val Lys Ile Glu Gly Ile Asp Ala Thr Gly Gly Asn Asn Gln Pro | | |
| | 260 | 265 |
| | | 270 |
| Asn Ile Pro Asp Ile Pro Ala His Leu Trp Tyr Phe Gly Leu Ile Gly | | |
| 275 | 280 | 285 |
| Thr Cys Leu | | |
| 290 | | |

<210> 228

<211> 15

<212> PRT

<213> Streptomyces plicatus

<400> 228

Ile Lys Val Leu Leu Ser Val Leu Gly Asn His Gln Gly Ala Gly

1

5

10

15

<210> 229

<211> 313

<212> PRT

<213> Streptomyces plicatus

<400> 229

Met Phe Thr Pro Val Arg Arg Arg Val Arg Thr Ala Ala Leu Ala Leu
1 5 10 15

Ser Ala Ala Ala Ala Leu Val Leu Gly Ser Thr Ala Ala Ser Gly Ala
20 25 30

Ser Ala Thr Pro Ser Pro Ala Pro Ala Pro Ala Pro Ala Pro Val Lys
35 40 45

Gln Gly Pro Thr Ser Val Ala Tyr Val Glu Val Asn Asn Asn Ser Met
50 55 60

Leu Asn Val Gly Lys Tyr Thr Leu Ala Asp Gly Gly Gly Asn Ala Phe
65 70 75 80

Asp Val Ala Val Ile Phe Ala Ala Asn Ile Asn Tyr Asp Thr Gly Thr
85 90 95

Lys Thr Ala Tyr Leu His Phe Asn Glu Asn Val Gln Arg Val Leu Asp
100 105 110

Asn Ala Val Thr Gln Ile Arg Pro Leu Gln Gln Gln Gly Ile Lys Val
115 120 125

Leu Leu Ser Val Leu Gly Asn His Gln Gly Ala Gly Phe Ala Asn Phe
130 135 140

Pro Ser Gln Gln Ala Ala Ser Ala Phe Ala Lys Gln Leu Ser Asp Ala
145 150 155 160

Val Ala Lys Tyr Gly Leu Asp Gly Val Asp Phe Asp Asp Glu Tyr Ala
165 170 175

Glu Tyr Gly Asn Asn Gly Thr Ala Gln Pro Asn Asp Ser Ser Phe Val
180 185 190

His Leu Val Thr Ala Leu Arg Ala Asn Met Pro Asp Lys Ile Ile Ser
195 200 205

Leu Tyr Asn Ile Gly Pro Ala Ala Ser Arg Leu Ser Tyr Gly Gly Val
210 215 220

Asp Val Ser Asp Lys Phe Asp Tyr Ala Trp Asn Pro Tyr Tyr Gly Thr
225 230 235 240

Trp Gln Val Pro Gly Ile Ala Leu Pro Lys Ala Gln Leu Ser Pro Ala
245 250 255

Ala Val Glu Ile Gly Arg Thr Ser Arg Ser Thr Val Ala Asp Leu Ala
260 265 270

Arg Arg Thr Val Asp Glu Gly Tyr Gly Val Tyr Leu Thr Tyr Asn Leu
275 280 285

Asp Gly Gly Asp Arg Thr Ala Asp Val Ser Ala Phe Thr Arg Glu Leu
290 295 300

Tyr Gly Ser Glu Ala Val Arg Thr Pro
305 310

<210> 230

<211> 15

<212> PRT

<213> Bacillus amyloliquefaciens

<400> 230

Gly Thr Val Ala Ala Leu Asn Asn Ser Ile Gly Val Leu Gly Val
1 5 10 15

<210> 231

<211> 15

<212> PRT

<213> Bacillus amyloliquefaciens

<400> 231

Asn Gly Ile Glu Trp Ala Ile Ala Asn Asn Met Asp Val Ile Asn
1 5 10 15

<210> 232

<211> 15

<212> PRT

<213> Bacillus lentus

<400> 232

Thr Gly Ser Gly Val Lys Val Ala Val Leu Asp Thr Gly Ile Ser
1 5 10 15

<210> 233

<211> 15
<212> PRT
<213> Bacillus lentus

<400> 233
Ser Ala Glu Leu Tyr Ala Val Lys Val Leu Gly Ala Ser Gly Ser
1 5 10 15

<210> 234
<211> 17
<212> PRT
<213> Bacillus lentus

<400> 234
Gly Ser Ile Ser Tyr Pro Ala Arg Tyr Ala Asn Ala Met Ala Val Gly
1 5 10 15

Ala

<210> 235
<211> 15
<212> PRT
<213> Bacillus lentus

<400> 235
Gly Ala Gly Leu Asp Ile Val Ala Pro Gly Val Asn Val Gln Ser
1 5 10 15

<210> 236
<211> 272
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Hybrid of
Bacillus lentus and Bacillus amyloliquefaciens

<400> 236
Ala Gln Ser Val Pro Trp Gly Ile Ser Arg Val Gln Ala Pro Ala Ala
1 5 10 15

His Asn Arg Gly Leu Thr Gly Ser Gly Val Lys Val Ala Val Leu Asp
20 25 30

Thr Gly Ile Ser Thr His Pro Asp Leu Asn Ile Arg Gly Gly Ala Ser
 35 40 45

Phe Val Pro Gly Glu Pro Ser Thr Gln Asp Gly Asn Gly His Gly Thr
 50 55 60

His Val Ala Gly Thr Ile Ala Ala Leu Asn Asn Ser Ile Gly Val Leu
 65 70 75 80

Gly Val Ala Pro Ser Ala Glu Leu Tyr Ala Val Lys Val Leu Gly Ala
 85 90 95

Ser Gly Ser Gly Ser Val Ser Ser Ile Ala Gln Gly Leu Glu Trp Ala
 100 105 110

Gly Asn Asn Gly Met His Val Ile Asn Met Ser Leu Gly Gly Ser Gly
 115 120 125

Ser Ala Ala Leu Lys Ala Ala Val Asp Lys Ala Val Ala Ser Gly Val
 130 135 140

Val Val Val Ala Ala Ala Gly Asn Glu Gly Thr Ser Gly Ser Ser Ser
 145 150 155 160

Thr Val Gly Tyr Pro Gly Lys Tyr Pro Ser Val Ile Ala Val Gly Ala
 165 170 175

Val Asp Ser Ser Asn Gln Arg Ala Ser Phe Ser Ser Val Gly Pro Glu
 180 185 190

Leu Asp Val Met Ala Pro Gly Val Ser Ile Gln Ser Thr Leu Pro Gly
 195 200 205

Asn Lys Tyr Gly Ala Tyr Asn Gly Thr Ser Met Ala Ser Pro His Val
 210 215 220

Ala Gly Ala Ala Ala Leu Ile Leu Ser Lys His Pro Asn Trp Thr Asn
 225 230 235 240

Thr Gln Val Arg Ser Ser Leu Glu Asn Thr Thr Thr Lys Leu Gly Asp
 245 250 255

Ser Phe Tyr Tyr Gly Lys Gly Leu Ile Asn Val Gln Ala Ala Ala Gln
 260 265 270